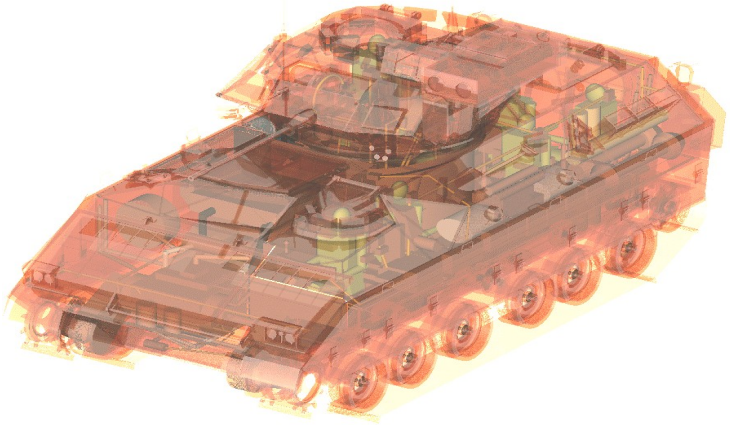
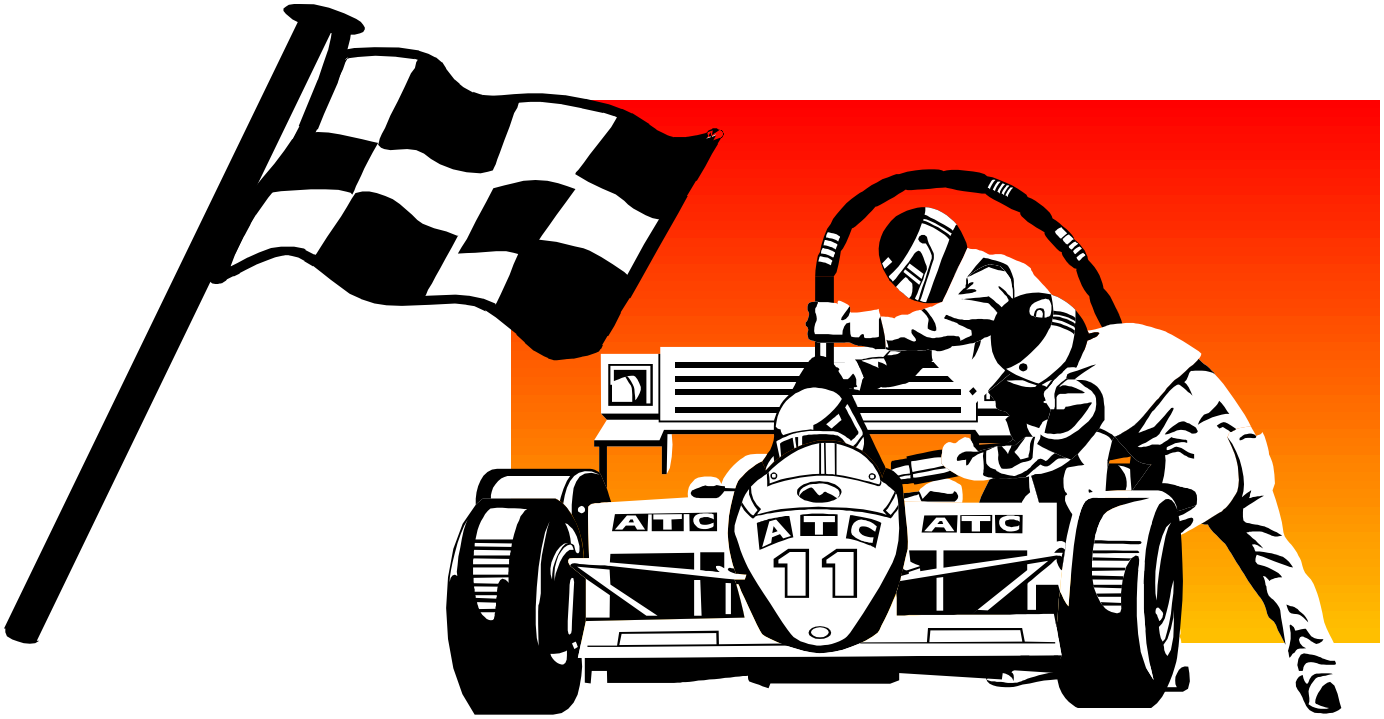
PIT STOP ENGINEERING:



The Ultimate in System Design Optimization

PIT STOP SMARTS

In Racing, the Checkered Flag does not always go to the car with the most horsepower…but to the vehicle designed to maximize benefit from the Pit Stop!



Pit Stop Engineering for the Army

Pit Stop Engineering applied to Army Acquisition: Capability edge goes to Force designed to maximize benefit from supportability and training.

- easy, efficient maintenance
- minimized dependence on maintenance tools
- reduced logistics tail
- realistic training for both operation and support

While we disengage for a Pit Stop, the Opposing Force is still trying for Victory

Pit Stop Engineering Attributes

- RAPID
- WELL CHOREOGRAPHE
- HIGHLY EFFICEINT
- HIGHLY TRAINED CREW
- SPECIFIC DESIGN CHARACTERISTICS

ATTRIBUTES WHEN APPLIED TO ACQUISITION

Rapid…Reduced Time to Field Equipment

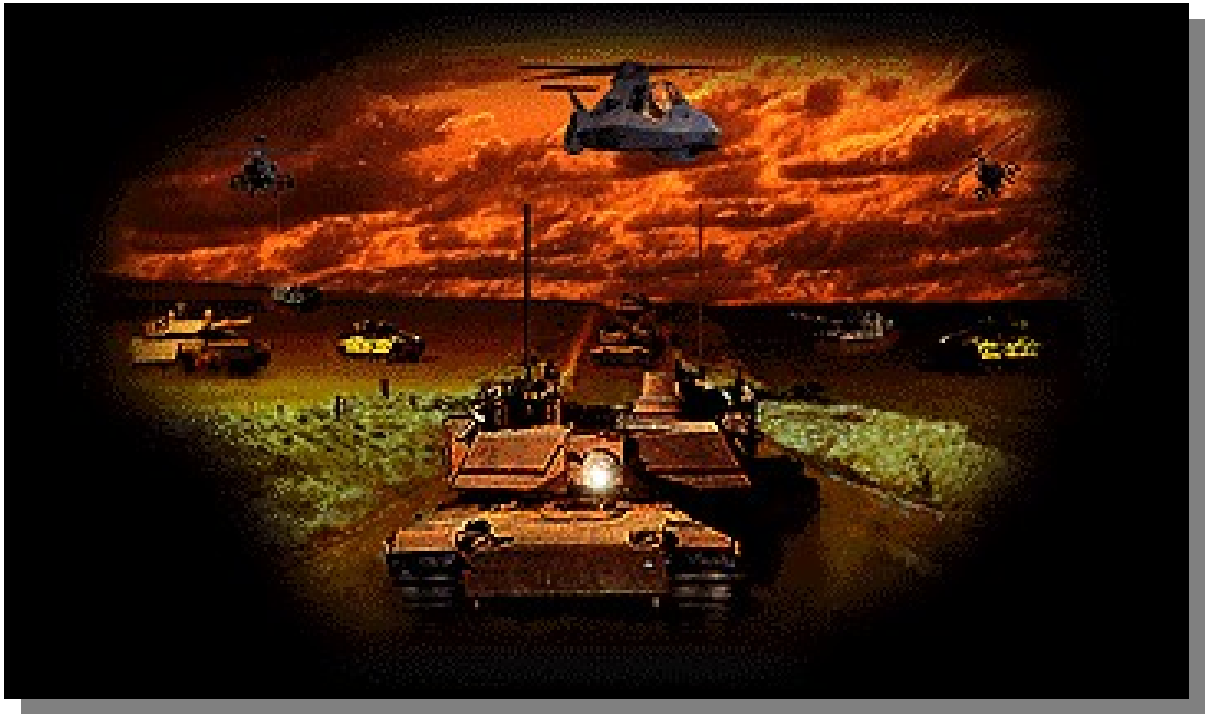
Well Choreographed…Highly Tuned Doctrine

Highly Efficient…Optimized Logistics

Highly Trained Crew…Well Honed Trained & Ready Force (system operations and supportability)

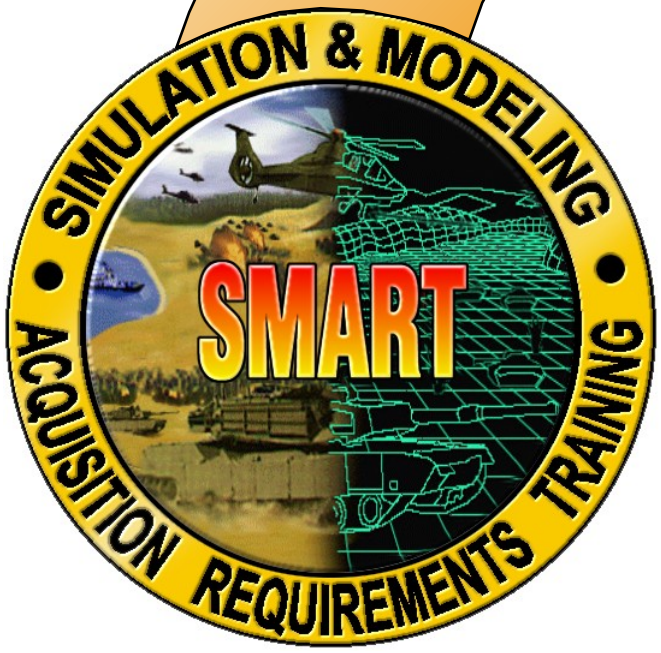
Specific Design Characteristics…Equipment designed to Maximize Benefit from Doctrine, Logistics, and Training

How Do We Conduct Pit Stop Engineering?



Modeling & Simulation enables the execution of Pit Stop Engineering such that quality products are rapidly and economically developed, fielded and sustained. Application of M&S in this manner is SMART…Simulation & Modeling for Acquisition, Requirements and Training.

Simulation and Modeling for Acquisition, Requirements and Training (SMART)



The Army's vision for SMART is a process in which we capitalize on Modeling and Simulation (M&S) technology to address the issue of system development and life-cycle costs through the combined efforts of the

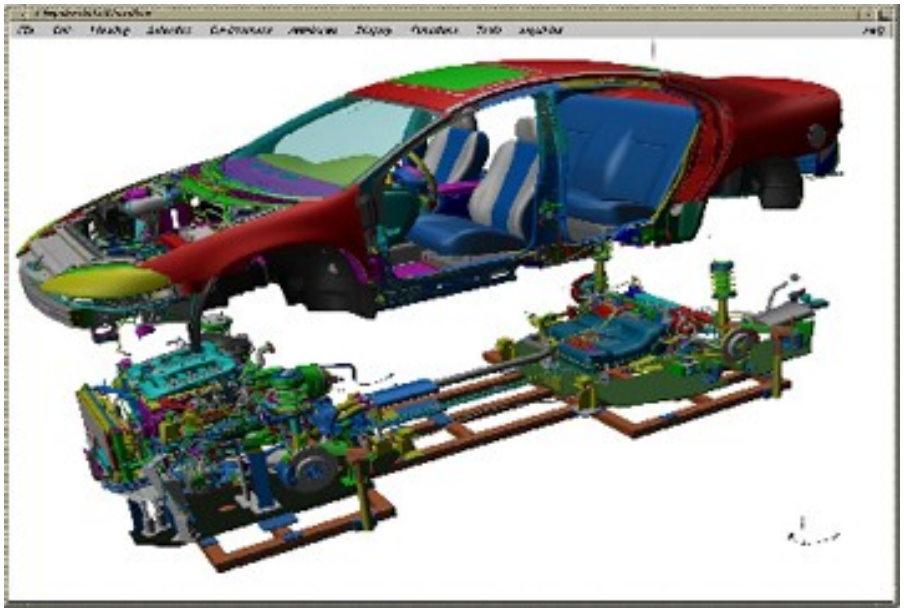
What Will SMART Achieve?

- **Reduced Total Ownership Cost (TOC), Time to Initial Operating Capability (IOC), and Logistics Tail**
- **Increased Supportability, Maintainability, and Military Worth**

- **More Effective, Cost Efficient Training at Individual, Crew, and System Level**

How Does SMART Enable Pit Stop Engineering?

- SMART Enables the Acquisition Workforce to Depict System Design Alternatives Digitally and Provide Access to all System Stakeholders
- Distributed Access to Developing Digital Design Allows Assessment of Proposed Changes for Impacts to all Acquisition Functions



- System Design Evolves With Optimization Across all Functions Vice at the Expense of one Another
- Iterate System Design to Maximize Pit Stop Engineering

SMART Pit Stop Engineering in Acquisition Today

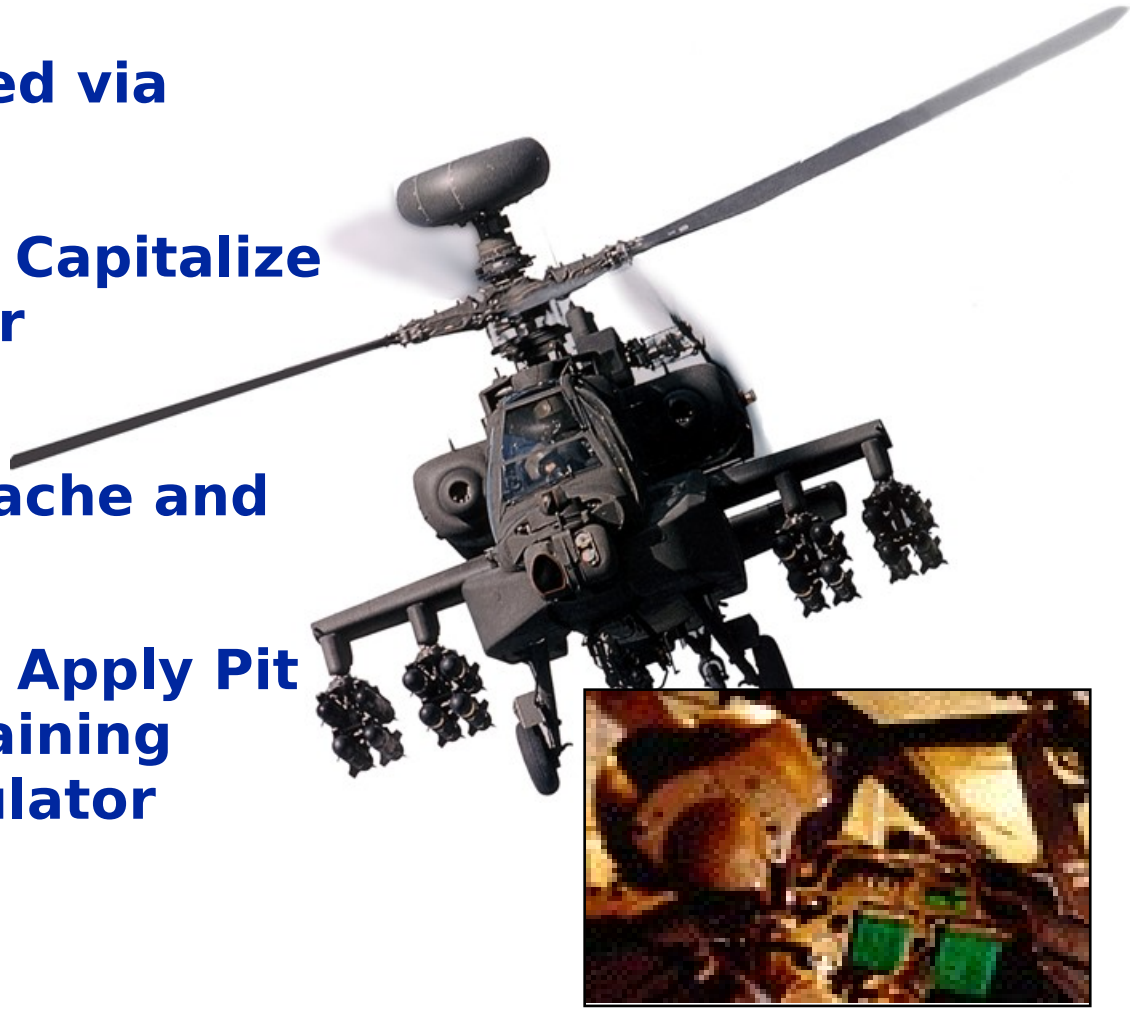
- **Legacy Systems:** Planned Product Improvements (PIPs), Engineering Change Proposals (ECPs), etc. are all opportunities to apply Pit Stop Engineering. Use of M&S through SMART provides the means to hone system design changes without hardware prototype "trail and error".

- **New Systems:** New system development efforts can design in "rapid, tool free

Pit Stop Philosophy…Systems designed to maximize performance in battle, logistics, and training take home the flag.

Apache AH-64D

- **Program PIPs executed via SMART**
- **Re-assess Basic Load, Capitalize on PIPs to Re-engineer Logistic Support**
- **Interface Between Apache and Hellfire Missile**
- **Apache Crew Trainer - Apply Pit Stop Philosophy to Training through Training Simulator**



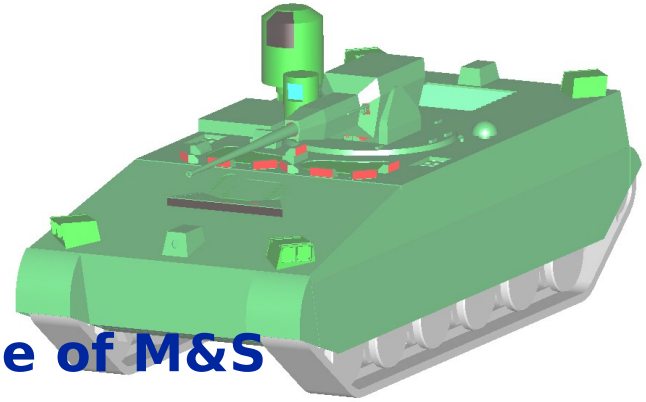
Close Combat Tactical Trainer (CCTT)

- CCTT Provides Combined Arms Simulation Environment to exercise Pit Stop Philosophy
- CCTT can be Employed to Explore Doctrine and T for Future Systems to Influence Final Design
  - Analysis Conducted During System Development can be leveraged to Develop More Effective Training

Crusader

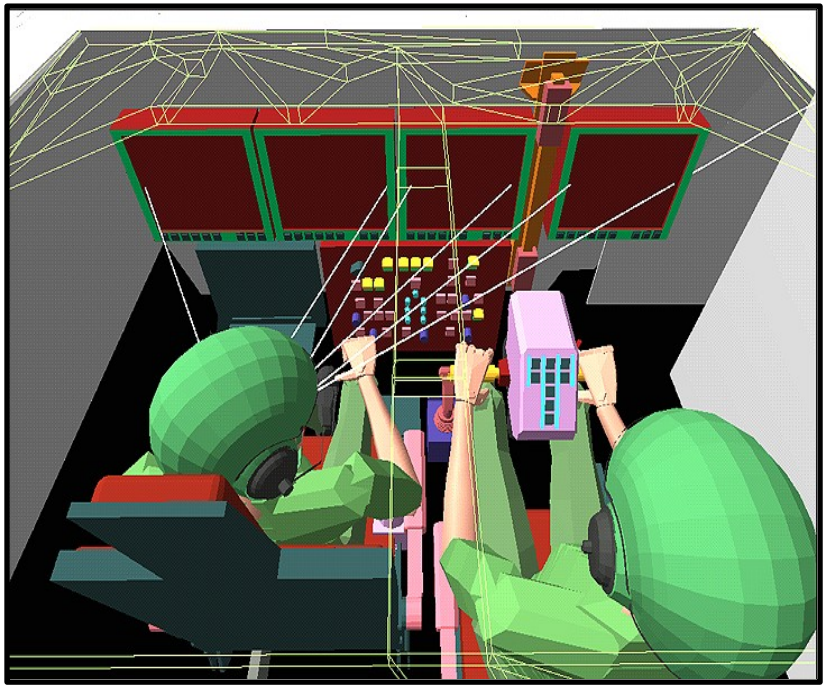
- Crusader was Developed Using a CAD System (Pro-Engineer)
- Pit Stop Engineering Ideally Applied to Virtual Prototype
- Crusader Program Operates Within a Digital Integrated Environment That Digitally Links the PMO, Contractor, TARDEC, Assorted Test Ranges, and Other Activities
- IDE and M&S Tools Facilitate Collaboration Between PM Crusader the TRADOC System Manager (TSM), and Trainers

Future Scout and Cavalry System (FSCS)



- FSCS Prior to MS I
- Ideally Poised to Benefit From SMART and Pit Stop Engineering Philosophy
- FSCS Being Developed Jointly With UK; use of M&S Facilitates the Collaboration
- FSCS can be Developed Through Distributed Product Description
- Pit Stop Engineered fielded FSCS includes “Tool Free Maintenance”, Minimal Logistics Tail, and Highly Trained Crew (Virtual Combat Veterans)

Pit Stop Test and Evaluation



Design Model for Assessing MANPRINT for Grizzly Breacher

- **Conduct "What-if" Drills for Early Development of T&E Plans and Scenarios**
- **Accelerate the Synergies Between the Testing and Training Communities**
- **Assess system design for Maintenance, Supportability, and Training in accordance with Pit Stop Philosophy**

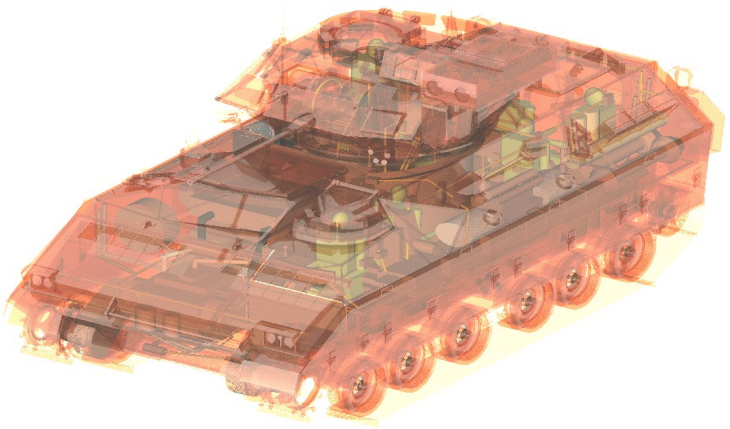
What is the Role of the Requirements Community?

- Cost/Performance Tradeoff Analysis
- Early ID of Unrealistic Requirements
- Early ID of Enabling Technologies
- Earlier Opportunity to Address Life Cycle Cost
- Use Virtual Prototypes to aid Threat Assessment & Mission Area Analysis

What is the Role of the Training Community?

- Assess Impact of TTP and Doctrine on Design Concepts
- Trained Crew Simultaneous w/ 1st Unit off Production Line
- Re-use of Software and Simulation to Support Embedded and Distributed Training

What Will a SMART Future Look Like?



Synthetic Assessment of Virtual Prototypes in Environments Allows Stakeholders to Evaluate and Evolve System Designs to Maximize and Hone Performance in Battle, Supportability, and Training.